REMARKS

Claims 1-22 are pending in the subject application prior to this Amendment. The Examiner rejects claims 1-3 and 12-14 under 35 U.S.C. § 103(a) as being unpatentable over the "admitted prior art" in view of Wilcox et al. (US 6,920,315). The Examiner also rejects claims 4-11 and 15-22 under 35 U.S.C. § 103(a) as being unpatentable over the "admitted prior art" in view of Wilcox et al. and further in view of Trikha et al. (US 6,072,993).

The above rejections are respectfully disagreed with and are traversed below.

Independent claim 1 is directed to a method for operating a multi-mode mobile station comprising at least two antennas, wherein at least two modes operate within at least one common range of frequencies, comprising: transmitting a signal from a first antenna circuit of the mobile station in the common range of frequencies; and electronically detuning the resonance of a second antenna of the mobile station such that the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna circuit, wherein the step of detuning comprises varying an impedance of at least one component that forms a part of the second antenna circuit.

Similarly, independent claim 12 is directed to a multi-mode mobile station comprising at least two antennas, wherein at least two modes operate within at least one common range of frequencies, comprising: for each mode, a transmitter circuit comprising an antenna circuit that operates in the common range of frequencies; and a controller, responsive to a first one of said transmitter circuits transmitting, for electronically detuning the resonance of a second antenna of the mobile station such that the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna, wherein the controller, when detuning, varies an impedance of at least one component that forms a part of the second antenna circuit.

Claims 2-3, 5-11, 13-14 and 16-22 depend directly or indirectly from an independent claim and recite further detailed features of the claimed invention.

Wilcox et al. disclose a multiple antenna mobile communication device, such as a cellular phone, having multiple radios and multiple antennas located in close proximity to each other. The device uses a parallel tuning circuit to optimize the isolation between the antennas. The parallel tuning circuit can include multiple impedance matching circuits to match impedance in multiple frequency bands or isolating antennas.

The Examiner maintains the position that Wilcox et al. disclose a mobile station comprising at least two antennas, a controller, responsive to a first one of the transmitter circuits transmitting, for electronically detuning the resonance of a second antenna of the mobile station such that the resonance of the second antenna is mis-matched to the first antenna (citing the abstract and lines 14-55 of Wilcox et al.). Thus, according to the Examiner, it would have been obvious to modify these teachings to Applicant's alleged admitted prior art of Fig. 2 and page 1, line 28 to page 2, line 1, so that "dual mode cellular phones operate in two or more overlapping frequency bands." Applicant respectfully disagrees.

Wilcox et al. do not disclose the claimed method wherein at least two modes operate within at least one common range of frequencies, including electronically detuning the resonance of a second antenna of a mobile station such tat the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna, wherein the step of detuning comprising varying an impedance of at least one component that forms a part of the second antenna circuit.

Moreover, the Examiner appears to contend that Wilcox et al. tunes the antenna resonance, as claimed herein. Applicant also disagrees. Wilcox et al. discloses that the tuning circuit is between the antenna and the radio. If one desires to use both

radios, neither one of the antennas can be tuned off the working frequency.

Regarding the Trikha et al. reference, it is again respectfully pointed out that in the subject claims, the antenna itself is detuned. The teachings of Trikha et al. particularly relate to changing the matching of the feeding line according to the antenna used. The tuning is implemented by changing the impedances of the feeding line or coupling the antenna off when needed. Also, in the Trikha et al. reference one of the antennas, e.g. the external vehicle antenna, can be removed or switched off.

The Trikha et al. reference is directed to a dual band transceiver working with both an internal (telephone) antenna and an external (vehicle) antenna. One antenna is selected according to the mode and the other is "switched off" in a way to avoid switches in the antenna line. Thus, an antenna is located in the transceiver itself and the other is externally located in the vehicle, which makes them likely to be relatively far away from each other. When the antennas are far enough away from each other, they are not in the near field of one another and thus do not interfere with each other's air interface performance.

In contrast to Trikha et al., there are at least two antennas simultaneously present in Applicant's claimed invention and because both of these antennas function in at least one common range of frequencies, they both share at least part of the same resonance frequency range. Accordingly, power transmitted from one antenna is absorbed by the other because of this common resonance frequency, and the other antenna also affects the radiation pattern of the first transmitting antenna. Thus, the solution presented by the subject claims is to detune the resonance frequency of the antenna itself to another "wrong" resonance frequency so as to reduce coupling of the transmitted signal from the first antenna circuit into the second antenna circuit.

It is respectfully asserted that the teachings of Trikha et al., whether viewed alone or in combination with any alleged admitted prior art, do not disclose nor suggest the subject claims. Moreover, even if the teachings of Trikha et al. were applied to the

problem presented and solved by the subject application, the two antennas would function in the same common range of frequencies and continue to disturb one another. The Trikha et al. reference does not provide any suggestion regarding how to solve the afore-referenced problem addressed by the subject claims as Trikha et al. do not even appear to be aware of a problem occurring when two antennas are functioning in, for example, the same frequency band with one in the near field of the other.

However, as indicated above, the independent claims have been further clarified to help point out that in the subject application the frequency detuning is taking place after the interface point, i.e., in the antenna, or by modifying the antenna ground connections. Thus, independent claims 1 and 12 clarify, respectively, that the detuning comprises varying an impedance of at least one component that forms a part of the second antenna circuit, and the controller, when detuning, varies an impedance of at least one component that forms a part of the second antenna circuit.

Changing the impedence of the antenna for isolation purposes does not necessarily tune the antenna to another frequency. As the antenna in cellular communication frequencies is a separate component, the border line between the antenna and the rest of the circuitry may be shown. In the subject application, the frequency detuning is taking place after this interface point, i.e., in the antenna, or by modifying the antenna ground connections, as described above.

The cited references do not disclose or suggest such features. Moreover, one skilled in the art seeking to develop the claimed method for operating a multi-mode mobile station and multi-mode mobile station would not even be motivated to look to the cited references for or guidance nor modify their teachings in an attempt to arrive at the subject claims.

In view of the foregoing, it is respectfully submitted that the cited references do not disclose or suggest the claimed invention, whether viewed alone or in combination

with the alleged admitted prior art teachings. Accordingly, it is believed that independent claims 1 and 12 are patentable and thus all of the remaining dependent claims are patentable as well, at least for the reason that each depends either directly or indirectly from an allowable independent claim.

All issues having been addressed, the subject application is believed to be in condition for immediate allowance. No new issues are raised that would require an additional search. Thus, the Examiner is requested to enter and consider the subject Amendment.

An early notification of the allowance of claims 1-3, 5-14 and 16-22 is earnestly solicited.

Respectfully submitted:

Christine Wilkes Beninati 6-12-06

Christine Wilkes Beninati Date
Reg. No. 37,967

Customer No.: 29683

HARRINGTON & SMITH, LLP
4 Research Drive
Shelton, CT 06484-6212

Telephone: 203-925-9400
Facsimile: 203-944-0245
Email cbeninati@hspatent.com

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